

CUMBERLAND COUNTY COUNCIL.

ANNUAL REPORT

OF THE

MEDICAL OFFICER OF HEALTH,

F. H. MORISON, M.D., D.P.H.

FOR THE YEAR 1929.

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1930.

CUMBERLAND COUNTY COUNCIL.

To the Cumberland County Council.

MR. CHAIRMAN, LADIES AND GENTLEMEN,

I have pleasure in presenting to you this my Twenty-second Annual Report on the Health of the Administrative County for the year 1929.

Although the year 1929 was not marked by a serious outbreak of any disease in particular, the vital statistics are not so satisfactory as in the previous year.

The birth-rate remains practically the same, the death-rate shows an increase of 1 per 1,000 of population, whilst the infant mortality shows an increase of 12 per 1,000 births over the previous year.

The noteworthy feature of the year 1929 is the fact that for the first time a complete Maternity and Child Welfare Scheme has been put before and accepted by the County Council, and is only awaiting the sanction of the Ministry of Health to be put into operation.

The necessity for attention to mothers prior to the birth of a child is emphasised by the facts that of the total infant deaths, considerably more than half (65 per cent.) occurred before the child was three months old, and that more than one-third of them died from debility or premature birth before they were a week old.

I wish particularly to draw attention to the Appendix, in which Dr. Kenneth Fraser is publishing, in full, for the first time his observations on the treatment of Tuberculosis by Calcium and Iodine.

Dr. Fraser has during the past three years devoted much time and attention to this investigation, and although it would be unwise, at this stage, to speak in too favourable terms, the results so far shown have been most encouraging—so encouraging, in fact, that further investigation and a much fuller trial of the treatment are imperative.

That the results so far obtained have not been hastily published will be realised when I say that the investigation is now in its fourth year. That the carrying out of such an investigation in a scattered rural area is not

without its difficulties is evident from the fact that the treatment of one case alone has involved over 1,000 miles of motoring.

So many different treatments for tuberculosis have been tried from time to time that one is apt to become sceptical, but when, as has happened in this series of cases, constitutional symptoms disappear, the temperature soon becomes normal, body weight increases markedly, and, most important of all, the sputum, at one time containing large numbers of tubercle bacilli, shortly contains none at all: or in other words from being positive becomes negative, then the least one can say is that this form of treatment is worthy of an extended trial, and that *some means will have to be devised by which this may be done.*

I have the honour to be,

Ladies and Gentlemen,

Yours obediently,

F. H. MORISON,

County Medical Officer of Health.

May, 1930.

SUMMARY OF VITAL STATISTICS.

	Birth-rate.		Death-rate.		Infant. Mortality.	
	1929.	1928.	1929.	1928.	1929.	1928.
Urban Districts	19.0	19.1	14.1	12.6	71	61
Rural Districts	16.1	16.5	13.3	11.9	78	64
Administrative						
County	17.7	17.9	13.3	12.3	74	62
England & Wales ...	16.3	16.7	13.4	11.7	74	65

Area.

The area of the Administrative County as given in the Census Returns for 1921 is 968,598 acres—Municipal Boroughs and Urban Districts 62,133 acres, and Rural Districts 906,465 acres.

Population.

The population as estimated for the year 1929 by the Registrar-General for the year 1929 :—

Urban Districts	116,100
Rural Districts	92,620
Administrative County ...	208,720

a decrease of 1880 on the previous year.

Births.

The Births registered in the County during the year 1929 numbered 3,703 (1,834 males and 1,869 females), giving a birth-rate of 17.7 per thousand of population, compared with 3,782 (1,937 males and 1,845 females) and a rate of 17.9 the previous year.

In the Urban Districts there were 2,209 births (1,103 males and 1,106 females) giving a rate of 19.0, and in the Rural Districts 1,494 births (731 males and 763 females) giving a rate of 16.1 per thousand of population.

The corresponding figures for the previous year were : Urban Districts, 2,234 births and a rate of 17.9; and in the Rural Districts, 1,548 births and a rate of 16.5.

The birth-rate for England and Wales was 16.3 for the year.

Arranged in the order of their birth-rates the Urban and Rural Districts stand thus:—

<i>Urban Districts.</i>	<i>Rural Districts.</i>
Whitehaven . 24.3 (24.6)	Wigton 19.2 (18.8)
Harrington .. 21.9 (17.9)	Penrith 18.4 (18.6)
Wigton 21.0 (17.8)	Longtown ... 16.5 (17.7)
Arlecdon and	Carlisle 15.5 (14.7)
Frizington . 20.3 (19.4)	Cockermouth. 15.5 (17.0)
Millom 19.4 (16.5)	Brampton 15.3 (14.4)
Cockermouth. 18.0 (13.7)	Whitehaven . 15.1 (16.6)
Maryport 17.6 (20.0)	Bootle 13.3 (12.9)
Penrith 17.6 (18.9)	Alston 13.0 (10.8)
Workington . 17.4 (18.2)	
Egremont ... 17.0 (18.4)	
Keswick 16.6 (14.9)	
Cleator Moor. 16.3 (18.1)	
Aspatria 15.7 (13.2)	
Holme	
Cultram ... 15.1 (18.4)	

Note.—In all the tables the figures in brackets are those of the previous year.

Illegitimate Births.

The number of illegitimate births was 252; thus 68 per 1,000 of the total births were illegitimate, compared with 264 and 70 the previous year. The rates of illegitimate births per 1,000 of the total births in the various Sanitary Districts are as follows:—

<i>Urban.</i>	<i>Rural.</i>
Holme	Brampton 110 (153)
Cultram ... 120 (108)	Carlisle 109 (81)
Cockermouth .. 95 (109)	Cockermouth .. 85 (82)
Penrith 84 (79)	Whitehaven ... 77 (52)
Arlecdon and	Wigton 76 (111)
Frizington .. 73 (74)	Penrith 73 (113)
Workington ... 64 (48)	Rootle 65 (53)
Whitehaven ... 58 (38)	Longtown 50 (64)
Egremont 56 (34)	Alston 28 (69)
Harrington 53 (38)	
Millom 48 (90)	
Maryport 47 (23)	
Wigton 40 (92)	
Aspatria 34 (42)	
Cleator Moor .. 17 (82)	
Keswick 14 (114)	

In the Urban Districts 58 and in the Rural Districts 81 per 1,000 births were illegitimate, compared with 57 and 87 respectively in the previous year.

Deaths.

The numbers of deaths registered was 2,879 (1,448 males and 1,431 females). This gives a death-rate of 13.3 per 1,000 of population, compared with 2,597 (1,328 males and 1,269 females) and a rate of 12.3 the previous year. The death-rate of England and Wales was 13.4.

In the Urban Districts there were 1,643 deaths (845 males and 798 females) giving a rate of 14.1. In the Rural Districts there were 1,236 deaths (603 males and 633 females) giving a rate of 13.3.

The corresponding figures for the previous year were:—Urban Districts, 1,477 and a rate of 12.6; Rural Districts, 1,120 and a rate of 11.9.

Arranged in the order of their death-rates the Urban and Rural Districts stand thus:—

<i>Urban.</i>	<i>Rural.</i>
Cockermouth. 19.3 (14.1)	Brampton ... 16.8 (16.8)
Millom 19.3 (13.1)	Longtown ... 16.5 (10.6)
Penrith 16.6 (11.9)	Alston 15.6 (14.9)
Aspatria ... 14.9 (11.8)	Carlisle 15.5 (13.6)
Arlecdon and	Penrith 14.3 (11.9)
Frizington . 14.6 (14.1)	Wigton 12.4 (12.2)
Cleator Moor. 14.4 (11.3)	Whitehaven . 11.8 (10.7)
Wigton 14.3 (15.1)	Bootle 11.2 (10.8)
Egremont ... 13.8 (12.6)	Cockermouth 11.2 (10.3)
Whitehaven . 13.7 (11.9)	
Keswick 12.9 (19.1)	
Holme	
Cultram ... 12.5 (11.2)	
Workington . 12.5 (11.2)	
Maryport ... 12.2 (13.6)	
Harrington .. 12.1 (12.4)	

Infant Mortality.

3,703 births were registered and 275 infants died before they reached the age of one year. The infant mortality was, therefore, at the rate of 74 per 1,000 births, 12 per 1,000 higher than in the previous year.

The Infant Mortality rate in England and Wales was 74 per 1,000 births.

In the Urban Districts there were 2,209 births and 158 infant deaths. The infant mortality rate was, therefore, 71 per 1,000 births, 10 per 1,000 higher than in the previous year.

In the Rural Districts there were 1,494 births, and 117 infant deaths, giving an infant mortality of 78 per 1,000 births, 14 per 1,000 higher than in the previous year.

The mortality rate for legitimate infants was 63 per 1,000, that of illegitimate infants 95 per 1,000.

Arranged in the order of their infant mortality rates the Urban and Rural Districts stand thus:—

<i>Urban.</i>		<i>Rural.</i>	
Egremont	121 (34)	Alston	114 (103)
Harrington	107 (77)	Whitehaven ..	114 (68)
Maryport	84 (64)	Longtown	111 (27)
Millom	83 (24)	Bootle	92 (53)
Whitehaven ..	76 (67)	Brampton	76 (81)
Arlecdon and		Cockermouth ..	74 (66)
Frizington ..	73 (107)	Carlisle	71 (63)
Penrith	70 (13)	Penrith	69 (95)
Cleator Moor ..	67 (52)	Wigton	38 (37)
Workington ...	67 (70)		
Holme			
Cultram	53 (65)		
Cockermouth ..	47 (47)		
Aspatria	36 (42)		
Wigton	26 (90)		
Keswick	14 (98)		

The Infant Mortality rate which has not maintained its low rate of last year could be further materially reduced by greater care of expectant mothers.

Of the 275 infant deaths recorded, 122 equivalent to 44 per cent. of the total were due to delibility, premature birth, &c.

Further it should be noted that of the total infant deaths 36 per cent. occurred before the infant was one week old and considerably more than half (65 per cent.) before the age of three months was reached.

Cancer.

310 deaths were registered as due to Cancer, a rate of 1.4 per 1,000 of population, compared with 311 deaths and a rate of 1.4 the previous year.

Arranged in the order of their death-rates from Cancer the Urban and Rural Districts stand thus:—

<i>Urban.</i>			<i>Rural.</i>		
Holme			Brampton ...	1.9	(2.2)
Cultram ..	2.6	(1.4)	Alston	1.8	(2.7)
Millom	2.4	(1.7)	Wigton	1.7	(1.4)
Cleator Moor .	2.2	(1.0)	Cockermouth	1.5	(0.9)
Keswick	2.1	(3.9)	Penrith	1.5	(1.6)
Aspatria	2.0	(1.4)	Carlisle	1.3	(1.5)
Cockermouth .	1.7	(0.6)	Longtown ...	1.3	(1.3)
Maryport ...	1.7	(1.8)	Whitehaven .	1.3	(1.0)
Penrith	1.7	(2.1)	Bootle	1.2	(1.3)
Workington .	1.1	(1.3)			
Egremont ...	0.9	(1.4)			
Harrington ..	0.9	(2.0)			
Whitehaven .	0.9	(1.1)			
Arlecdon and					
Frizington .	0.8	(2.0)			
Wigton	0.8	(1.3)			

In the Urban Districts the death-rate from Cancer was 1.4 per 1,000, whilst in the Rural Districts it was 1.5 per 1,000.

Zymotic Diseases.

The diseases included under this name are:—Enteric Fever, Measles, Smallpox, Scarlet Fever, Whooping Cough, Diphtheria, and Diarrhœa.

75 deaths were registered from these diseases, compared with 54 the previous year. Thus gives a rate of 0.3 compared with 0.2 the previous year.

Arranged in the order of their death-rates from Zymotic Diseases the Urban and Rural Districts stand thus:—

<i>Urban.</i>		<i>Rural.</i>	
Arlecdon and		Whitehaven .	0.7 (0.2)
Frizington .	0.6 (1.2)	Brampton	0.5 (0.1)
Whitehaven .	0.6 (0.2)	Bootle	0.3 (Nil)
Cleator Moor.	0.5 (Nil)	Wigton ...	0.3 (0.09)
Maryport	0.5 (0.09)	Carlisle	0.2 (0.2)
Harrington ...	0.4 (0.2)	Cockermouth.	0.2 (0.1)
Workington .	0.3 (0.5)	Penrith	0.2 (0.3)
Cockermouth.	0.2 (0.2)	Longtown	0.1 (0.4)
Penrith	0.2 (0.1)	Alston	Nil (0.3)
Wigton	0.2 (0.2)		
Millom	0.1 (0.1)		
Aspatria	Nil (Nil)		
Egremont	Nil (0.1)		
Holme			
Cultram ...	Nil (Nil)		
Keswick	Nil (0.2)		

Respiratory Diseases.

From these diseases—principally Bronchitis and Pneumonia—there were 420 deaths, compared with 320 the previous year.

The death-rate in the Administrative County from these diseases was 2.0 per 1,000 of population, compared with 1.5 per 1,000 the previous year.

In the Urban Districts the rate was 2.3 against 1.7 and in the Rural Districts the rate was 1.5 against 1.2 in the previous year.

Arranged in the order of their death-rates from Respiratory Diseases the Urban and Rural Districts stand thus:—

<i>Urban.</i>		<i>Rural.</i>	
Wigton	3.9 (1.6)	Alston	3.0 (2.6)
Millom	3.5 (2.1)	Brampton	2.3 (1.8)
Whitehaven .	3.4 (1.5)	Carlisle	1.7 (0.8)
Egremont	3.2 (2.2)	Penrith	1.7 (0.8)
Harrington	3.2 (2.5)	Bootle	1.5 (1.0)
Cleator Moor .	2.6 (2.4)	Whitehaven .	1.5 (0.8)
Cockermouth .	2.5 (1.9)	Cockermouth	1.4 (1.6)
Penrith	2.3 (1.2)	Longtown	1.1 (0.9)
Arlecdon and		Wigton	1.1 (1.2)
Frizington .	2.1 (1.8)		
Workington .	1.7 (1.5)		
Aspatria	1.1 (0.2)		
Maryport	1.1 (1.3)		
Holme			
Cultram ...	0.8 (2.6)		
Keswick	0.3 (2.9)		

General Provision of Health Services.

No change of any note has occurred during the year.

Maternity and Child Welfare.

There were at the end of the year 1929 on the roll 99 midwives.

All the Midwives are visited by the Inspector every three months, and special visits are paid when deemed necessary. During the year 396 routine and 57 special visits were paid.

The number of notices received under Rule 23 of the Central Midwives Board is as follows:

Medical help	...	...	...	...	360
Still-birth	...	...	...	..	27
Liabie to be a source of infection	..				26
Artificial feeding	...	...	...		23
Laying out dead body	...	...	..		25

Payments made to doctors under Section 14 of the Midwives Acts amounted to £629 0s. 9d.

During the year the following visits were paid to the homes:

	By Health Visitors.	By District Nurses.
To Births notified	990	1618
First visits		
To births not notified ...	38	43
Re-visits	5641	16336
Ante-natal visits	76	7050
Visits to children 1-5 ...	2807	3836

In my last report I dealt fully with the subject of Maternal Mortality and acting on instructions from your Health and Housing Committee, issued a report during the year on "A Complete Scheme of Maternity and Child Welfare."

That report was accepted by your Health Committee and subsequently adopted in its entirety by the County Council, and is only waiting the sanction of the Ministry of Health to be put into operation.

Provision is made in the scheme to provide for practically every eventuality and if the women will accept the help offered to them, there cannot be any doubt that an immense amount of suffering and ill-health will

be prevented, and the high maternal mortality which has prevailed in this County for so long, will soon be materially reduced.

Housing (Rural Workers) Act, 1926,

Since my last report the Council have received applications under the above Act in respect of 43 dwellings and grants have been sanctioned in all cases.

One application, however, was withdrawn by the applicant after assistance had been promised.

During the year ended 31st March, 1930, grants amounting to £2,707 have been promised, making the total amount of assistance in this form since the inception of the Act, £6,745. Of this amount £3,355 has already been paid and a sum of £50 advanced by way of loans, the number of dwellings involved being 67.

Inspection and Supervision of Food.

The following is a copy of the County Analyst's report for the year 1929:—

ANNUAL REPORT OF THE COUNTY ANALYST.

1 During the 12 months ended the 31st December, 1929, I have analysed 334 samples of Food and Drugs submitted by the Inspectors, appointed under the Food and Drugs (Adulteration) Act, 1928, for the County of Cumberland, viz. :—

From Whitehaven Division	...	...	...	111
From Carlisle Division	...	...	...	49
From Workington Division	...	...	...	87
From Wigton Division	...	...	...	34
From Penrith Division	...	...	...	51
Total	...	...	...	332

In addition to these 1 sample of Milk submitted by the Chief Veterinary Inspector for the County and 1 sample of Milk submitted by the Sampling Officer for the Dumfries Burgh, an appeal sample, have been reported upon.

The number of samples submitted altogether is, therefore, 334 an increase of 18 over the number received for the corresponding period ended the 31st December, 1928.

2 The following table gives a general idea of the result of the analysis of these samples, together with the action taken in those cases in which samples were found to be other than genuine, and the outcome of such action:—

Samples of Milk submitted for analysis	...	...	242
Samples of other articles	...	...	92
Total	...	...	334

No. adulterated or below standard	37
No. of doubtful quality	0
No. of appeal samples	12
No. of samples taken "on delivery" (Reference)	8
No. of persons cautioned	2
No. of person summoned	6
No. of persons convicted	5
No. of persons discharged	0
No. of persons to pay costs	1
No. of cases in which no action taken	29
No. of cases pending at end of year	0
Amount of Fines	£11 12 0
Amount of Costs	£15 1 8

For the 12 months ended the 31st December, 1928, 5 persons were summoned but no convictions were recorded although 3 persons appeared to answer the charges against them.

3 The percentage of adulteration for the year is 11.82; for the 12 months ended the 31st December, 1928, it was 10.39. In each case all samples which have been reported as not being of genuine quality are included, but appeal, reference and special samples are not included.

4 The only article in respect of which proceedings have been instituted is milk, the whole of the other samples being of genuine quality.

5 Of the 242 samples of Milk submitted during the 12 months, 37 were returned as being adulterated or below standard, while 12 samples were taken as appeal to the cow samples and 8 samples as reference samples in course of delivery; the remaining 184 samples were found to be genuine.

Excluding the appeal, reference and special samples the percentage of adulteration for Milk is 16.74; for the previous 12 months the figure was 15.23 which shows a slight increase

The average figures for Non-fatty Solids and for Fat in the genuine samples, 184 in number, were as follow:—

Non-fatty Solids	8.75 per cent.
Fat	3.74 per cent.

The average figures for 178 genuine samples analysed during 1928 were:—

Non-fatty Solids	8.81 per cent.
Fat	3.64 per cent.

These figures indicate how consistently the quality of the genuine samples is maintained and how satisfactory that quality is.

Of the 12 appeal samples taken during the year, 6 were genuine, 1 was deficient in both Non-fatty Solids and in Fat, 1 was deficient in Non-fatty Solids while 4 were deficient in Fat, and of the 8 reference samples 4 were genuine, 1 was deficient in Non-fatty Solids and in Fat, 1 was deficient in Fat and 2 were deficient in Non-fatty Solids.

Of the samples other than Milk submitted for analysis during the year, 92 in number, there were 35 different commodities and the accompanying table shows the distribution:—

Almonds, Ground	1	Lard	1
Baking Powder	4	Margarine	3
Butter	10	Milk, Condensed	3
Candied Peel	1	Mustard, Compound	1
Cheese	2	Oatmeal	2
Cinnamon, Ground	1	Pepper	5
Cocoa	7	Pepper, Cayenne	1
Coffee	4	Pickles	1
Cornflour	5	Raisins and Sultanias	3
Cream of Tartar	3	Rice, Ground	5
Currants	3	Sago	1
Custard Powder	2	Sausage	1
Fish Paste	1	Soda, Bi-carbonate of	2
Flour	2	Suet, Shredded	1
Flour, Self-raising	3	Sugar	2
Infant Food	3	Tapioca	2
Jam	3	Tartaric Acid	1
		Tea	2

It is satisfactory to record that it has not been necessary to report against any of these samples under the requirements of the Public Health (Preservatives, etc., in Food) Regulations.

7 Apart from the above comments the work of the past 12 months calls for no further observations.

(Signed) CYRIL J. H. STOCK.

The following report by the Chief Veterinary Inspector, Mr. R. Simpson, F.R.C.V.S., is both interesting and instructive, showing as it does the efforts that are being made under the Milk and Dairies Acts and Orders to deal with tuberculous cows and milk.

I gladly take this opportunity of expressing my great appreciation of the valuable help Mr. Simpson has always given your Health Department in this very difficult work.

To the Chairman and Members of the Joint Sub (Milk and Dairies) Committee.

MILK AND DAIRIES ACTS AND ORDERS.

I have to submit for your consideration my second Annual Report on the work done by the Veterinary Department of the County under the above Acts and Orders during the year 1929.

INTRODUCTORY.

The legislation affecting this side of the County Council's responsibilities was discussed at full length in my last Annual Report. There has been no alteration or amendment in that legislation during the year under review.

Complete registers in regard to premises coming within the scope of the Milk and Dairies Order are not yet available, and to some extent the lack of this information interferes with the routine inspection of herds in certain districts. It is the duty of Sanitary

Authorities to compile these registers and to forward them to the County Council, and also to notify any changes which may take place from time to time.

INSPECTION OF DAIRY HERDS

The routine inspection of dairy herds has been continued during the year so far as has been practicable, but again it has to be recorded that the number of herds inspected is considerably below the total number of premises which are registered. The attention of the Committee has already been directed to the inadequacy of the existing staff to cope with the inspection of herds on a uniform basis throughout the County, and a recommendation to increase the staff by the appointment of a further whole-time assistant, has received approval.

The inspection of herds during the year has also suffered owing to pressure of work during the last three months of the year in connection with the administration of the Diseases of Animals Act. In spite of this, however, the number of herds inspected is higher than in 1928. The results of the inspection are set forth in the tables given at the end of this report, and the general results of the operation of the Tuberculosis Order during the year are also tabulated there for comparison.

The primary object of inspection under the Milk and Dairies Order is, of course, the detection of tuberculosis and other diseases likely to affect the milk supply, but no opportunity is lost of endeavouring to educate producers not only in regard to these diseases and their prevention, but also to point out defects in methods of milk production which tend to general contamination of the milk supply. The importance of this educational side of the inspection is emphasised in the section of the Report dealing with the results of the milk sampling which has been carried out during the year.

TUBERCULAR INFECTION IN MILK.

The Milk and Dairies Consolidation Act, 1915, provides for notice being given to the County Medical Officer of Health, if any milk produced in the County is found to contain tubercle bacilli by any Medical Officer of Health in districts outside, or within the administrative area.

Six notices of this nature as compared with four in 1928, were received during the year and transmitted to the Chief Veterinary Inspector for the necessary action to be taken in regard to the examination of the herds concerned.

The complaints came from the following cities and towns:—

Carlisle	...	...	...	...	1
Newcastle	...	...	...	...	2
Sunderland	...	...	...	...	1
Tynemouth	...	...	...	...	1
Gateshead	..	...	...	...	1
Total	...	...	..	..	6

To this number should be added notices regarding three samples found to be tubercular as the result of samples taken by the Police. These three supplies were in the following districts:—Maryport (1), Alston (1), Brampton (1). This makes a total of nine tubercular supplies dealt with during the year.

The action taken in these cases consists in making a careful clinical examination of all milk producing cows on the farm. Individual milk samples are taken of any cows showing suspicious signs of any udder disease. If these are negative, the cows are grouped and samples taken from each group, and further individual samples taken from the group found to give positive results. In each case where an individual sample is found positive without grouping, a further control sample is taken from the whole herd, so as to make sure that the infection is limited to the one cow which gave the positive individual sample.

In six of the cases the offending cow was discovered at the first examination and slaughtered under the provisions of the Tuberculosis Order. Control samples subsequently taken from these herds were found to be free from infection.

In one case the cow involved had been removed from the herd before notice was received regarding the case. The cow, however, was traced, and it was found that it had been detected and slaughtered in the district of another local authority.

In another case, careful clinical examination, together with individual and group sampling, failed to show the source of infection in the herd involved. There is always an interval of about four to six weeks between the taking of the original sample and the receipt of information by the County Medical Officer of Health that the sample contained tubercle bacilli. In this interval, cows are often changed and sold off, rendering it difficult to arrive at satisfactory results in every case which is dealt with under the Act.

A further case notified involved a mixed sample taken at a large milk depôt which derived its supplies partly from Cumberland and partly from other counties. Three herds were involved in this County, but careful examination of the herds failed to show any evidence of tubercular udders. The milk from these herds was also sampled in bulk and submitted to biological examination with negative results, so that the infection in this case most probably originated from some source outside the County.

This latter case indicates the difficulty of tracing tubercular milk to its source after it has been bulked at depôts and the supplies from many different sources have been mixed. At the same time, it shows to what extent tubercular infection can be spread through a large quantity of milk, probably through one cow affected with tuberculosis of the udder.

ROUTINE SAMPLING OF MILK.

With the object of supplementing the work of dairy herd inspection, and at the same time, of affording a measure of protection to milk consumers in the County similar to that provided by the larger cities and towns, a system of sampling of milk supplies consumed in the County has been arranged in accordance with the Committee's instructions. The great majority of these samples have been collected by the Police, simultaneously with the taking of samples under the Food and Drugs Act.

The duty of collecting these samples has been carefully and efficiently discharged by the Police Officers appointed for the purpose.

These samples are submitted to a laboratory test for the presence of tubercle bacilli and excessive bacterial contamination.

A total of 200 samples have been dealt with during the year, and the results are as follows:—

	Clean.	Contaminated		Total.
		Tubercular.	(Non-tubercular).	
Carlisle Division ...	9	2	19	30
Penrith Division ...	13	nil	17	30
Wigton Division ...	7	nil.	13	20
Workington Division	18	1	41	60
Whitehaven Division	19	nil.	41	60
	66 (33%)	3 (1.5%)	131 (65.5%)	200

The samples taken involved 187 farms, 13 of the samples representing second and third investigations. The number of herds giving tuberculous milk is not unduly high as compared to other districts, but the number of herds sampled is of course, relatively small.

The results, however, are sufficient to justify the necessity for developing within reasonable limits, adequate inspection of all milk producing herds.

The position revealed, however, in regard to the general cleanliness of the milk, is not altogether satisfactory. The standard by which the cleanliness was judged was a comparatively low one, in fact, lower than the standard laid down for Grade "A" milk. It is generally agreed that ordinary milk should reach the standard of Grade "A," which is the lowest grade of milk designated by the Ministry of Health.

In each of the cases where the examination of the sample gave unsatisfactory results, visits were made to the farm concerned and a careful examination of the milking herd and equipment made, with a view to securing more cleanliness in production. 135 visits of this nature were paid during the year.

The presence of excessive number of coliform germs (*bacillus coli*), is the worst feature in regard to the contamination. The occurrence of these germs in excessive quantities is largely the results of faulty methods of production, generally dirty utensils, failure to keep the cows clean, and lack of preparation of the udders before milking.

It is more difficult to ensure the freedom of milk from these organisms in the summer than in the winter, as the higher temperature in the summer with consequent difficulties in proper cooling, favour their more rapid propagation. Lack of proper water supplies and a sufficiency of boiling water for proper sterilisation of the utensils, are difficulties with which many producers have to contend.

Much improvement, however, can be effected by the adoption of reasonably clean methods, and this question is constantly being stressed in connection with our inspections.

The bulk of the ordinary bacterial contamination in the milk is not of a nature likely to cause harm, at least to the adult consumer, but it does lower the keeping qualities of the milk, and its presence is therefore undesirable from a marketing point of view.

The producer, however, is not always to blame, and subsequent careless handling, both by retailers and consumers, may nullify all efforts towards securing proper cleanliness at the source of production.

MILK (SPECIAL DESIGNATIONS) ORDER OF 1923.

The nomenclature in regard to the designated grades of milk has remained unchanged. The designations are somewhat misleading, but no agreement has yet been reached regarding alternatives. The grades of raw milk designated by the Ministry of Health are as follows:—(1) "Certified" Milk; (2) Grade "A" (Tuberculin Tested); (3) Grade "A" Milk. All these grades are required to reach a given standard of bacterial cleanliness, and the first two grades must be from cows which have passed the tuberculin test. Licences for the sale of the first two grades are issued by the Ministry of Health, which is responsible for the general control and inspection of the herd licensed. Grade "A" milk licences are issued by the County Council.

There seems to be no reason why all the duties in connection with this particular Order should not be discharged by the Local Authority as the present system leads to some overlapping and unnecessary confusion.

The number of licences in force in the County is as follows:—

"Certified"	...	...	...	4
Grade "A" (T.T.)	...	...	...	5
Grade "A"	...	...	...	3
				—
Total	...	...	...	12
				—

The herds at the farms holding Grade "A" milk licences are regularly examined, to ensure their freedom from any clinical evidence of disease likely to affect the milk supply. Fourteen visits were paid to these farms during the year.

TABLE I.

Statement showing the Number of Herds Inspected and the Number of Cows Examined during the year 1929:—

Herds Inspected	...	...	...	...	...	618
Cows Examined	...	...	...	...	...	9915

TABLE II.

Statement showing the Number of Cows found to have Abnormal Conditions of the Udder:—

Tuberculosis of the Udder	...	...	...	...	8
Suspected Tuberculosis	...	...	...	...	23
Atrophy	...	...	...	...	86
Mammitis	...	...	...	...	27
Induration (non-tubercular)	...	...	...	...	46
Suppuration	...	...	...	...	3

In addition, four cows were found to be suffering from Tuberculous Emaciation, and five cows were detected showing clinical signs of Tuberculosis accompanied by a Chronic Cough.

TABLE III.

Statement showing the Number of Samples taken by Veterinary Inspectors under the Tuberculosis Order and Milk and Dairies Order (exclusive of Police Samples) and the results of the examination:—

Milk.

Number of samples taken	...	...	...	...	80
Number found to contain tubercle bacilli	...	...	...	...	10
Number found to contain other infectious organisms	...	...	...	...	4
Number negative	...	...	...	...	66

Sputum.

Number of samples taken	...	...	...	...	11
Number found to contain tubercle bacilli	...	...	...	...	4
Number negative	...	...	...	...	7

TABLE IV.

Statement showing the number of Cattle dealt with under the Tuberculosis Order:—

Premises on which "disease" was reported or otherwise suspected	...	...	...	...	266
Premises on which "disease" was found to exist	...	...	...	...	137
Premises on which "disease" was found not to exist	...	...	...	...	129
Total number of cattle on premises visited	...	...	...	...	10566
Number of cattle clinically examined	...	...	...	...	2105
Number of Cattle slaughtered by the Local Authority:—					
Cows in milk	...	...	...	...	79
Dry Cows and Heifers	...	...	...	...	60
Other Bovines	...	...	...	...	4
Total	...	...	...	...	143

Types of Tuberculosis found amongst the Cattle slaughtered:—

Tuberculosis of the Udder	...	...	...	...	19
Tuberculous Emaciation	...	...	...	...	58
Tuberculosis with Chronic Cough and Clinical Signs of the "Disease"	...	...	...	...	66
Total	...	...	...	...	143

CONTRAVENTIONS OF THE TUBERCULOSIS ORDER.

Proceedings in two cases were taken where owners failed to report the suspected existence of tuberculosis of the udder, and where the disease in the udder had developed to an advanced stage. Fines of £5 and costs were imposed in each case.

In another case an owner was fined £10 and costs for failing to report a cow which was suffering from advanced generalised tuberculosis.

I am, Gentlemen,

Your obedient servant,

R. SIMPSON,

Chief Veterinary Inspector.

The Courts, Carlisle.
March, 1930.

Prevalence of, and Control over, Infectious Diseases.

No case of Smallpox occurred in the County area during the year.

Scarlet Fever.

During the year 121 cases of Scarlet Fever were notified (56 in Urban and 65 in Rural Districts) compared with 185 the previous year.

No deaths were registered from this cause during the year.

Diphtheria.

During the year 95 cases (41 in Urban and 54 in Rural Districts) compared with 179 cases in the previous year.

From this disease there were 6 deaths (2 in Urban and 4 in Rural Districts) compared with 11 deaths the previous year.

Towards the end of the year Diphtheria was very prevalent in the village of Dalston in the Carlisle Rural area. In conjunction with the Medical Officer of Health of the district Schick immunisation of practically the whole school population was undertaken. In all 120 children, as well as 47 adults, were immunised.

There have been no further cases in the village.

Enteric Fever.

Ten cases were notified during the year, 1 in Holme Cultram, 1 in Maryport, 1 in Whitehaven, 3 in Workington, Urban Districts and 1 in Carlisle, 1 in Whitehaven and 2 in Wigton Rural areas.

Two deaths occurred one in Maryport, and one in Cleator Moor Urban district, which was not notified.

Puerperal Fever and Puerperal Pyrexia.

During the year 5 cases of Puerperal Fever were notified; 2 in Cockermouth, 1 in Penrith, 1 in Whitehaven, 1 in Wigton and 1 in Workington Urban Districts. 1 in Bootle, 1 in Cockermouth, 1 in Longtown and 1 in Wigton Rural Districts.

There was 1 death in Penrith Urban District, 1 in Longtown, 1 in Whitehaven and 1 in Wigton Rural Districts.

The case in the Whitehaven Rural area does not appear to have been notified.

As regards Puerperal Pyrexia 32 cases were notified (21 in Urban and 11 in Rural Districts).

Measles.

Nine deaths from Measles were registered against none the previous year. Eight of the nine deaths were of children under five years of age.

Whooping Cough.

Whooping Cough was the registered cause of 29 deaths (13 in Urban and 16 in Rural Districts) against 22 the previous year. Twenty-six of these were children under five years of age.

Diarrhœa.

Was the cause of the deaths of 30 infants under one year of age, compared with 33 the previous year.

Influenza.

Was the registered cause of 134 deaths compared with 60 the previous year.

The disease was widespread throughout the County, one or more deaths having occurred in each Sanitary District, both Urban and Rural, with the exception of the Holme Cultram Urban District, in which there was no death.

Ophthalmia Neonatorum.

23 cases were notified, 5 more than in the previous year. All were visited by a Health Visitor as soon as notified. All recovered without any impairment of vision.

Tuberculosis.

Particulars of new cases of Tuberculosis and of all deaths from the disease during 1929 are here given:—

Age. Periods.	New Cases.				Deaths.					
	Pulmonary.		Non-Pulmonary.		Pulmonary.		Non-Pulmonary.			
	M.	F.	M.	F.	M.	F.	M.	F.		
0	...	—	...	1	...	—	...	3	...	—
1	...	2	...	6	...	2	...	4	...	2
5	...	11	...	11	...	1	...	2	...	2
10	...	6	...	6	...	—	...	—	...	2
15	...	17	...	9	...	10	...	5	...	2
20	...	15	...	1	...	12	...	14	...	5
25	...	29	...	5	...	13	...	14	...	2
35	...	16	...	3	...	8	...	13	...	3
45	...	12	...	—	...	9	...	6	...	1
55	...	9	...	—	...	13	...	5	...	—
65 & upwards	...	4	...	—	...	7	...	5	...	1
Totals	121	114	...	42	...	75	...	63	...	20

Arranged in the order of their death-rates from Pulmonary Tuberculosis the Urban and Rural Districts stand thus:—

<i>Urban.</i>			<i>Rural.</i>		
Arlecdon and			Alston	1.1	(Nil)
Frizington .	1.7	(1.6)	Carlisle	0.8	(0.3)
Millom	1.6	(0.8)	Whitehaven .	0.7	(0.2)
Cockermouth.	1.3	(1.2)	Brampton	0.5	(0.4)
Harrington ..	0.9	(0.6)	Longtown ...	0.5	(0.1)
Whitehaven .	0.9	(1.1)	Wigton	0.4	(0.2)
Cleator Moor.	0.8	(1.6)	Penrith	0.3	(0.5)
Penrith	0.8	(0.1)	Cockermouth.	0.2	(0.5)
Keswick	0.7	(0.2)	Bootle	0.1	(0.3)
Holme					
Cultram . .	0.6	(0.4)			
Wigton	0.5	(0.2)			
Workington .	0.5	(0.8)			
Egremont ...	0.4	(0.9)			
Maryport	0.3	(0.6)			
Aspatria	0.2	(0.8)			

The death-rate from Pulmonary Tuberculosis in 1929 throughout the County was 0.6 per 1,000 of the population; the same as last year.

Arranged in the order of their death-rates from all forms of Tuberculosis (including Pulmonary) the Urban and Rural Districts stand thus:—

<i>Urban.</i>			<i>Rural.</i>		
Arlecdon and			Alston	1.1	(Nil)
Frizington .	1.9	(2.0)	Longtown	1.1	(0.1)
Millom	1.8	(0.8)	Carlisle	1.0	(0.5)
Whitehaven .	1.4	(1.2)	Whitehaven .	0.8	(0.5)
Penrith	1.3	(0.3)	Bootle	0.5	(0.5)
Cockermouth.	1.0	(1.5)	Brampton	0.5	(0.4)
Harrington ..	0.9	(0.9)	Cockermouth .	0.5	(0.5)
Workington .	0.9	(1.2)	Penrith	0.4	(0.7)
Cleator Moor .	0.8	(1.8)	Wigton	0.4	(0.3)
Keswick	0.7	(0.7)			
Holme					
Cultram	0.6	(0.4)			
Wigton	0.5	(0.8)			
Egremont	0.4	(1.1)			
Maryport	0.4	(0.8)			
Aspatria	0.2	(1.1)			

Notifications of Pulmonary Tuberculosis.

In 1925 there were 252 notifications.

„ 1926	„	„	250	„
„ 1927	„	„	220	„
„ 1928	„	„	200	„
„ 1929	„	„	235	„

Although there is a slight increase in the number of notifications, the time at which cases have been notified, unsatisfactory as it still remains, shows a considerable improvement on the past three years.

The percentage of cases notified less than 6 months before death, or not notified at all, is this year less than in former years.

In 1926	the percentage was	65
„ 1927	„	„ 61
„ 1928	„	„ 65
„ 1929	„	„ 46

Public Health (Prevention of Tuberculosis) Regulations, 1925.

No action has been taken, and so far as I am aware, none has been necessary under these Regulations.

Public Health Act, 1925.

No action has been taken under Section 62 for the compulsory removal to hospital of anyone suffering from Tuberculosis.

Memo. 37/T.: Table I.

Form T.53.

TUBERCULOSIS SCHEME OF THE CUMBERLAND COUNTY COUNCIL.

Return showing the Work of the Dispensary (or
Dispensaries) during the year 1929.

DIAGNOSIS.	PULMONARY.				NON-PULMONARY.				TOTAL.			
	Adults.		Children.		Adults.		Children.		Adults.		Children.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
A.—New Cases examined during the year (excluding contacts):—												
(a) Definitely tuberculous	56	42	14	12	20	7	22	19	76	49	36	31
(b) Doubtfully tuberculous ... ..	...	...	...	...	...	...	...	...	14	5	7	5
(c) Non-tuberculous ..	...	...	...	...	...	...	...	...	15	14	35	22
B.—Contacts examined during the year:—												
(a) Definitely tuberculous	1	4	1	2	1	1	...	...	2	5	1	2
(b) Doubtfully tuberculous ... ..	...	...	...	...	...	...	...	...	2	2	9	6
(c) Non-tuberculous ..	...	...	...	...	...	...	...	...	21	27	268	247
C.—Cases written off the Dispensary Register as												
(a) Cured	9	5	4	...	2	1	9	4	11	6	13	4
(b) Diagnosis not confirmed or non-tuberculous (including cancellation of cases notified in error) ...	...	...	...	...	...	...	...	...	51	50	321	285
D.—Number of persons on Dispensary Register on December 31st:—												
(a) Diagnosis completed	224	166	68	61	26	13	60	51	250	179	128	112
(b) Diagnosis not completed ... ..	...	...	...	...	...	...	...	...	6	5	4	1

1. Number of persons on Dispensary Register on January 1st	710
2. Number of patients transferred from other areas and of "lost sight of" cases returned	28
3. Number of patients transferred to other areas and cases "lost sight of"	116
4. Died during the year	97
5. Number of observation cases under A (b) and B (b) above in which period of observation exceeded 2 months	22
6. Number of attendances at the Dispensary (including Contacts)	2980
7. Number of attendances of non-pulmonary cases at Orthopaedic Out-stations for treatment or supervision	158
8. Number of attendances, at General Hospitals or other Institutions approved for the purpose, of patients for	
(a) "Light" treatment	—
(b) Other special forms of treatment	—
9. Number of patients to whom Dental Treatment was given, at or in connection with the Dispensary ...	—
10. Number of consultations with medical practitioners:—	
(a) At Homes of Applicants	23
(b) Otherwise	42
11. Number of other visits by Tuberculosis Officers to Homes	182
12. Number of visits by Nurses or Health Visitors to Homes for Dispensary purposes	906
13. Number of	
(a) Specimens of sputum, etc., examined	250
(b) X-ray examinations made, in connection with Dispensary work	35
14. Number of Insured Persons on Dispensary Register on the 31st December	293
15. Number of Insured Persons under Domiciliary Treatment on the 31st December	100
16. Number of reports received during the year in respect of Insured Persons:—	
(a) Form G.P. 17	83
(b) Form G.P. 36	79

TUBERCULOSIS SCHEME OF THE CUMBERLAND COUNTY COUNCIL.

RESIDENTIAL INSTITUTIONS.

(A) Average Number of Beds Available for Patients during the Year 1929.

	Observation.	Pulmonary Tuberculosis.				Non-Pulmonary Tuberculosis.		Total.
		"Sanatorium" Beds.	"Hospital" Beds.	Diseases of Bones & Joints.	Other Conditions.			
Adult Males	—	11	...	2	—	...	...	16
Adult Females	—	7	3	2	—	...	...	12
Children (under 15) ...	1	12	1	9	—	...	...	23
Total	1	30	7	13	—	...	...	51

26

(B) Return showing the Extent of Residential Treatment during the year 1929.

Number of Patients		In Institutions.		Admitted during the year.		Discharged during the year.		Died in the Institution.		In Institutions on Dec. 31	
		on Jan. 1.									
Number of Patients	Adults	M.	...	...	44	...	41	2	...	...	13
		F.	...	...	32	...	32	3	...	...	9
	Children	M.	...	...	18	...	20	—	...	...	4
		F.	...	...	13	...	19	—	...	...	5
Number of Observation Cases...	Adults	M.	...	...	—	...	—	—	...	...	—
		F.	...	...	—	...	—	—	...	...	—
	Children	M.	...	...	7	...	4	—	...	...	3
	"	F.	...	...	—	...	—	—	...	...	—
Total		41	...	...	114	...	116	5	...	...	34

Table III.

RETURN showing the Immediate Results of Treatment of Patients Discharged from Residential Institutions during the year 1929.

on admission to the Institution.	Condition at time of Discharge.	Duration of Residential Treatment in the Institution.														
		Under 3 months.			3-6 months.			6-12 months.			More than 12 mths.			Total.		
		M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.			
Pulmonary Tuberculosis.	Class T.B. minus.	Quiescent ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Improved	3	4	...	9	8	7	3	2	3	...	...	...	...	39
		No Material Im- provement ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Died in Institu- tion ... ..	...	...	...	...	1	...	...	...	...	...	...	...	...	1
	Class T.B. plus Group 1.	Quiescent ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Improved	1	1	...	...	1	1	1	...	...	...	...	...	...	5
		No Material Im- provement ... ..	...	...	...	1	...	...	...	...	...	...	...	...	...	1
		Died in Institu- tion ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Class T.B. plus Group 2.	Quiescent ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Improved	3	1	...	11	5	1	5	5	1	...	...	...	...	32
		No Material Im- provement	3	1	...	...	...	...	...	2	...	...	...	...	...	6
		Died in Institu- tion ... ..	...	1	...	...	...	...	...	...	...	...	...	...	...	1
	Class T.B. plus Group 3.	Quiescent ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Improved ... ..	...	...	...	...	...	...	...	...	1	...	...	...	...	1
		No Material Im- provement	1	...	...	...	...	...	...	1	...	...	...	...	...	2
		Died in Institu- tion	2	...	...	...	...	...	...	...	...	...	...	...	...	2
	Non-Pulmonary Tuberculosis.	Bones and Joints.	Quiescent or Ar- rested	2	2	...	11
Improved ... ..			...	1	3	...	...	3	...	...	2	...	...	...	2	...
No Material Im- provement ... ..			...	...	...	...	...	...	...	...	1	...	...	1	...	2
Died in Institu- tion ... ..			...	...	...	...	...	...	...	1	...	...	...	...	...	1
Abdominal.		Quiescent or Ar- rested ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Improved ... ..	...	...	...	...	...	...	...	...	1	...	...	...	...	1	
	No Material Im- provement ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Died in Institu- tion ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Observation for purpose of diagnosis.		Under 1 week.			1-2 weeks.			2-4 weeks.			More than 4 weeks.					
	Tuberculous... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Non-tuberculous... ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Doubtful ... ..	...	...	...	...	...	...	...	...	...	...	...	...	4	4	

PUBLIC HEALTH (VENEREAL DISEASES) REGULATIONS, 1916.

Report of the Assistant Medical Officer of Health (Venereal Diseases) for the year ended 31st December, 1929.

During the year 562 persons were dealt with at the Treatment Centres at Carlisle and Whitehaven, of whom 350 attended for the first time and 25 were re-admitted suffering from the same infection after ceasing to attend or having been transferred to other Centres in a previous year.

Of all cases 79 were not suffering from Venereal Diseases leaving 483, an increase of 79 in the total number under treatment or observation for Venereal Disease as compared with the year 1928.

The attendances at the Medical Officer's Clinics were 3,603, an increase of 194, while the attendances for intermediate treatment were 2,275, an increase of 701.

The total attendances were 5,878, an increase of 895.

County or County Borough in which Patients resided.	New Patients.		Attendances, all patients.
Cumberland	189	...	2024
Carlisle	143	...	3743
Barrow-in-Furness	—	..	2
Birmingham	1	...	2
Cheshire	1	..	1
Essex	1	..	2
Lancashire	—	...	11
London	1	...	1
Manchester... ..	1	..	1
Northumberland	2	...	8
South Shields	1	..	1
Westmorland	5	...	35
Scotland Dumfriesshire ...	2	...	38
Glasgow	1	...	2
North Ireland	1	...	6
Isle of Man	1	...	1
	<hr/> 350		<hr/> 5878

Pathological Examinations.

All Wassermann tests were carried out at the Public Health Laboratory, Manchester. Of these 441 were done for patients attending the Clinics and 334 for patients under private treatment by Practitioners in Cumberland and Carlisle (including 256 tests for the staff of the Cumberland Infirmary).

Of Bacteriological tests 121 were done by the Medical Officer at the Clinics and 84 at Manchester.

Approved Arsenobenzene Compounds.

These were supplied free to any practitioners on the approved list who applied. The number of doses issued in this way was 38.

At the Clinics 1,308 doses were given, mostly by the intravenous method. Of these 560 were for patients residing in Carlisle, 726 for Cumberland, and 22 for other Areas.

While practitioners on the approved list may apply for any of the Arsenobenzene Compounds approved by the Ministry of Health it is found that at the Clinics it is best to use as few kinds as possible as stocks are apt to deteriorate. In addition to Novarsenobillon and Neokharsivan which have been in use for some years Sulpharsenol and Silver Salvarsan are now in regular use at the Clinics.

Treatment Centres.

1. *Carlisle.*

The same premises were in use at the Cumberland Infirmary and the hours at which the Clinics were held were unchanged. Repairs, chiefly redecorating, are urgently required, but in view of the uncertainty as to how much longer these rooms will remain in use nothing has been done. The Secretary of the Infirmary is still unable to give any information on this point.

The sanitary state of the rooms is most unsatisfactory.

During the year 357 patients were dealt with, an increase of 20 compared with the previous year. 217 attended for the first time, 17 were re-admitted, making 234, an increase of 10. The total attendances were 4,630, an increase of 775.

Of the new cases 126 were suffering from Gonorrhœa compared with 107 in 1928, while the new cases of Syphilis

were 49 compared with 35 in 1928. Of these Syphilis cases 22 were of less than one year's standing.

From these figures it is evident that both Gonorrhœa and Syphilis have increased considerably during the year 1929 in the neighbourhood of Carlisle.

742 doses of Arsenobenzene Compounds were given, and 260 Wassermann tests were carried out.

2. *Whitehaven.*

Clinics were held at the Whitehaven and West Cumberland Hospital at the same hours as in former years, namely, one afternoon Clinic for women and children, and one evening Clinic for men—one day a week.

Owing to a further increase in the attendances the time available is now quite insufficient and other arrangements must be considered.

A Male irrigation room should be provided and should be open daily for the treatment of Gonorrhœa under the supervision of a part-time Medical Orderly. The ideal arrangement would be for the Hospital to employ this man in the rest of his time on other duties leaving him free for an hour in the morning and an hour in the evening and for the Medical Officer's Male Clinics where he would assist. Suitable men trained in the Royal Army Medical Corps in hospital duties and V.D. work are available. One of the porters now at the Whitehaven Hospital has had such experience. It would be worth while making this suggestion to the Hospital Committee.

Another room for the examination and treatment of Gonorrhœa in the female should be provided so that greater privacy than is at present available could be obtained. The services of the Nurse in charge of the Clinic should be available for daily treatment of women. These would attend by appointment at any time convenient to the Nursing Staff. It is unlikely that at first there would be many who could be persuaded to attend but there is great scope for expansion in this direction. By the exercise of tact and patience and by having the right Nurse in charge this work would undoubtedly grow. It is urgently required.

The increasing attendance which is now practically double that of 1920, at the Clinic is seen from the following table:—

Year.	Male.	Attendances.		Total.
		Female.		
1920 ...	366	... 266	...	632
1921 ...	532	... 200	...	732
1922 ...	455	... 290	...	745
1923 ...	551	... 366	...	917
1924 ..	460	... 167	...	627
1925 ...	523	... 273	...	796
1926 ...	480	... 253	...	733
1927 ...	544	... 317	...	861
1928 ...	721	... 407	...	1128
1929 ...	870	... 378	...	1248

The daily attendance at the Clinics during the year has frequently been as high as 36 and on no occasion did it fall below 20, except in the absence of the Medical Officer on holiday. The average attendance was 25. The time allotted to each patient varies from a few minutes to half-an-hour or more, and averages about 12 minutes.

From these figures it will be seen that it is extremely difficult to deal adequately with the numbers now in attendance and any further increase will make the Clinic impossible to work.

To meet the immediate requirements the Clinic should be open on another day each week. One Session would be sufficient to start with, but the aim would be two Sessions as soon as the number of patients made this necessary.

The number of patients dealt with during the year was 205 compared with 176 in 1928. The number of new cases was 133 compared with 124 and there were 8 re-admissions. Attendances were 1,248 and all cases received individual attention by the Medical Officer.

The new cases of Gonorrhœa were 42, an increase of 14. The new cases of Syphilis were 37, an increase of 2.

566 doses of Arsenobenzene Compounds were given, and 181 Wasserman tests were carried out.

RETURN relating to all persons who were treated at the Treatment Centres at Carlisle and Whitehaven during the year ended the 31st December, 1929:—

	Syphilis.		Soft Chancre.		Gonorrhœa.		Conditions other than Venereal.		Total	
	M	F	M	F	M	F	M	F	M	F
1. Number of cases which—										
(a) at the beginning of the year under report were under treatment or observation for	65	40	4	...	61	17	...	...	130	57
(b) had been marked off in a previous year as having ceased to attend or as transferred to other Centres, and which returned to the Treatment Centre during the year under report suffering from the same infection	9	3	...	...	7	2	3	1	19	6
Total—Items 1 (a) and 1 (b)	74	43	4	0	68	19	3	1	149	63
2 (a). Number of cases dealt with at the Treatment Centre during the year for the first time	53	33	20	1	141	27	40	35	254	96
Total*—Items 1 (a), 1 (b) & 2 (a)	127	76	24	1	209	46	43	36	403	159
2 (b). Number of cases included in Item 2 (a) known to have received previous treatment at other Centres for the same infection	6	1	...	...	5	1	...	...	11	2
3. Number of cases which ceased to attend—										
(a) before completing the first course of treatment for	14	11	7	.	70	17	...	...	91	28
(b) after one or more courses but before completion of treatment for	28	18	...	...	...	...	...	...	28	18
(c) after completion of treatment, but before final tests as to cure of	4	1	4	...	34	6	...	...	42	7
4. Number of cases transferred to other Treatment Centres after treatment for	8	7	...	...	6	4	...	...	14	11
5. Number of cases discharged after completion of treatment and observation for	8	...	10	1	38	10	...	...	56	11
6. Number of cases which, at the end of the year under report, were under treatment or observation for	65	39	3	...	61	9	...	...	129	48
Total*—Items 3, 4, 5, and 6...	127	76	24	1	209	46	...	...	360	123
7. Out-patient attendances—										
(a) For individual attention by the Medical Officer ...	1302	758	98	17	1092	228	56	52	2548	1055
(b) For intermediate treatment, e.g., irrigation, dressings, &c. ...	...	...	...	2	2226	47	...	...	2226	49
Total Attendances ...	1302	758	98	19	3318	275	56	52	4774	1104
8. Aggregate number of "In-patient days" of treatment given to persons who were suffering from ...	...	...	...	...	...	...	...	...	...	...

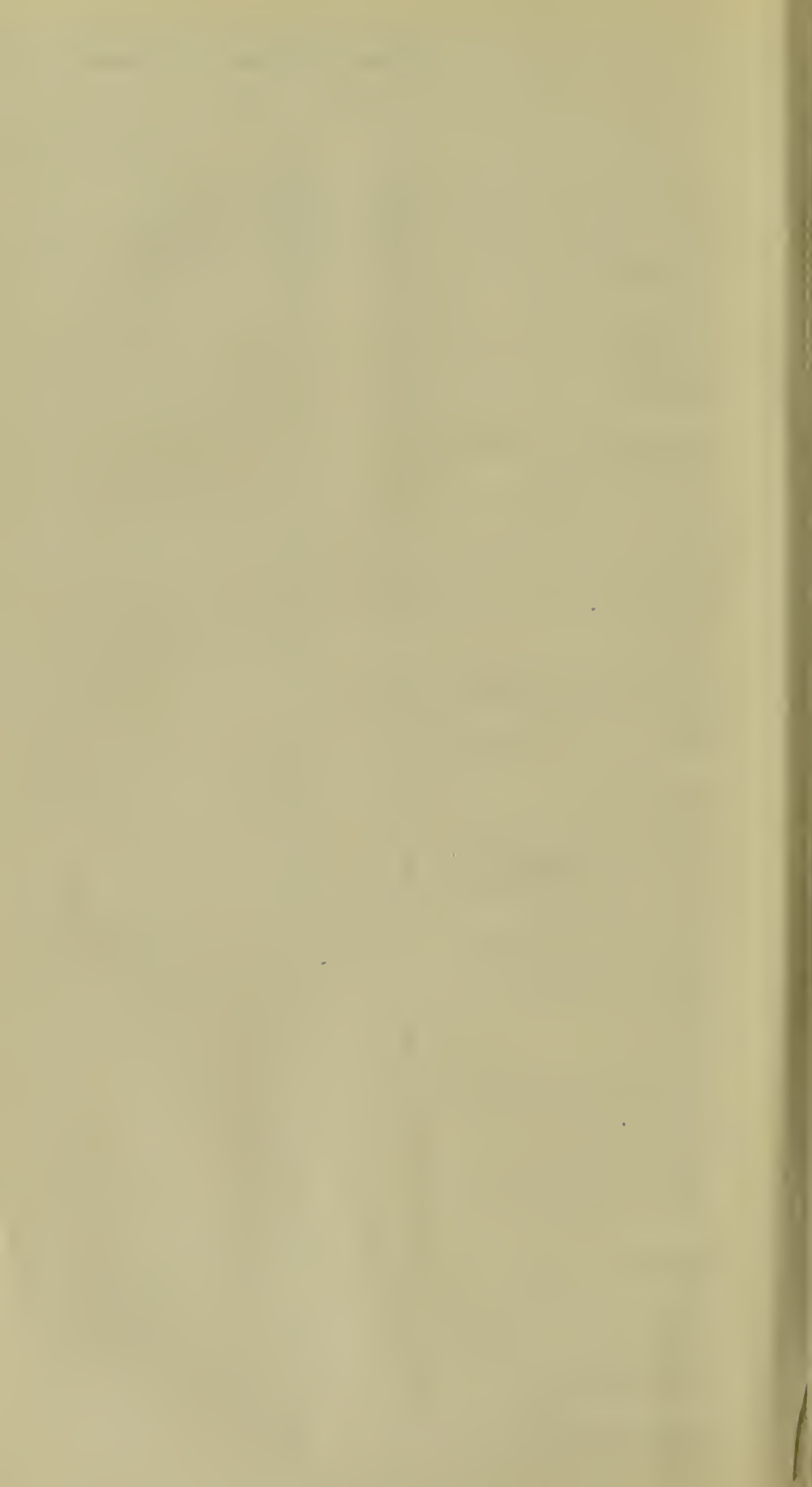
* The total of Items 1 (a), 1 (b) and 2 (a) in the vertical columns headed Syphilis, Soft Chancre and Gonorrhœa should agree with the corresponding total of Items 3, 4, 5, and 6.

	For detection of			For Wassermann Reaction
	Spirochetes.	Gonococci.	Other Organisms.	
9. Examinations of Pathological material:—				
(a) Specimens which were examined at, and by the Medical Officer of, the Treatment Centre ... ..	...	119	2	...
(b) Specimens from persons attending at the Treatment Centre which were sent for examination to an approved laboratory	17	62	5	441

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APPENDIX A.

* “ THE TREATMENT OF PULMONARY
TUBERCULOSIS BY CALCIUM AND
IODINE.”

BY

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May 24th, 1930.

The treatment of certain conditions, chiefly among school children, by means of iodine, has now been in operation in this County for about six years. The results, while there admittedly have been variations, have shown conclusively that iodine deficiency is an intervening factor in many diseases, and in some appears quite definitely to be the determining factor. There is reason to believe that of recent years the use of iodine in medical practice has very much extended, and it is, I think, probable that the results of the investigations in this County, which have been published in successive years, have contributed to this state of affairs.

Investigations have shown that children and adults suffering from chronic non-tubercular lung conditions in most cases improve remarkably on iodine, and pre-tubercular children respond as well, if not better.

Therefore, about three and a half years ago it was decided to test the effect of iodine on cases definitely diagnosed as pulmonary tuberculosis, with tubercle bacilli in the sputum. The first case to be treated with iodine was that of a young woman living at home under very good conditions, but who, in spite of every care and attention, and treatment on sanatorium lines at home, was rapidly going downhill. When first put on iodine she was very ill indeed, with a tremendous temperature swing—up to 8 degrees (96—104) some days—with very extensive disease of both lungs and cavitation in one lung. She was intensely toxic with vomiting, diarrhœa, and so on. She was seen at the time by five different medical men, all of whom considered her case as hopeless and her expectation of life to be in the region of two to three months.

She was given at first intramuscular injections of Iodeol Viel, which is iodine in sesame oil. She immediately began to improve. Her temperature became practically normal, vomiting and diarrhœa ceased, and the signs in the lungs decreased very markedly. After some months the patient ceased to improve further, and various other lines of treatment were tried concurrently with the iodine injections, e.g., exposure to sunlight, injections of sodium morrhuate, and so on. Finally calcium was tried in the shape of chloride of calcium, $7\frac{1}{2}$ grains daily, by the mouth. Since that date the patient has continued to make steady progress, and has

now, for over twelve months, been up and about daily, going for walks and reporting at Carlisle for examination from time to time without any ill-effects. It was found that after a lengthy period the injections of iodeol produced a local induration, and so the treatment was reversed, and injections of $\frac{1}{2}$ c.c. colossal calcium intramuscularly were given once a week, with 3 minims of tincture of iodine in a dessertspoonful of cod liver oil cream three times a day by the mouth.

The improvement under this modification of the treatment has definitely been the most marked of any of the combinations of treatment.

Encouraged by the results in this case, one or two other very advanced cases were treated for short periods on the same lines. The results varied; all showed improvement in one direction or another, such as settling of high temperatures, gain in weight, cessation of gastric symptoms, and so on. These results, however were of a temporary nature, as was more or less to be expected, all of the cases being practically classifiable as "hopeless" under any form of treatment.

Therefore, early in 1929 I determined, with the approval of the County Medical Officer, to apply the treatment to such *early* cases as came to our notice and fulfilled the conditions.

The conditions laid down as necessary were:—

- 1 The patient must be an *early* case with, for example, recognisable signs of tuberculosis at one apex.
2. The patient must have tubercle bacilli in the sputum.
- 3 The patient must be of a temperament likely to co-operate in giving the treatment a fair trial over such a period as might be necessary.

It proved to be extraordinary difficult to find cases complying with these simple conditions. Certain cases suggested proved on careful examination to be far too advanced, and in fact, although all the Tuberculosis Officers in the County were asked to co-operate in finding suitable early cases during 1929, only three recommendations were made, of whom one proved to be unsuitable. I found two suitable cases in my own area, and during the year was, therefore, able to investigate the effect of

the treatment on four cases. Towards the end of 1929 the Health Committee, in view of the results obtained on these four cases, authorised the expenditure of £300 during 1930 on extending the investigation on other suitable cases. In co-operation with Dr. Goodchild, the Medical Superintendent of Blencathra Sanatorium, and, indeed, at his request, I have carefully examined the records of all cases recommended for admission to Blencathra, among whom one might reasonably expect to find all *early* cases other than those remaining under private treatment.

I am writing this report towards the end of May, 1930, and so far we have only been able to find six cases who are, in the opinion of Dr. Goodchild and myself, *even approximately suitable*. In fact, the close search of the past 17 months, during which 321 cases of pulmonary tuberculosis have been notified in this County, has revealed not more than 5 or 6 really *early* cases. Dr. Goodchild broadly confirms this, and estimates, from a careful survey of his records of admissions—amounting to 3,336—for 25 years, that not more than 284, or 8%, of the admissions to Blencathra during that period have been early cases—corresponding to Class 1 of the Turban-Gerhardt Classification.

When it is remembered that practically all cases admitted to Blencathra from this area (as no doubt from all other areas) are chosen from the clinically earliest cases of which we receive notification, it will be appreciated that the percentage of early cases *among the total notified* must be much smaller than 8%. It is probable that the early cases among the general notifications received do not exceed 2%.

This is a most extraordinary state of affairs. It means that in over 90% of the cases who apply for sanatorium treatment under the Tuberculosis Regulations in this area, the patients are already in the middle or advanced stages. The time for cure or arrest of the diseases is more or less past; all that remains, in the majority of cases, is to delay the finale, but, speaking generally, the game is up before treatment begins. I make no attempt to explain why this is so—no doubt various factors are contributory—but of the essential fact I have no shadow of doubt.

There has recently been a great awakening in the County of public interest in the question of maternal mortality. There is an equal, if not a greater, need for the awakening of public interest to the importance of early treatment in tuberculosis. If treatment is delayed until the disease has reached the second or third stage that is simply playing with the dice loaded against the patient. If similar delay took place before treatment could be obtained in, say, influenza, pneumonia, diphtheria, appendicitis, and so on, the results would be equally disastrous, but in point of fact this does not occur. There is no doubt that the insidious, or gradual, nature of tuberculosis is responsible (as, to a lesser degree, in cancer) for this state of affairs.

We hear much of the falling incidence and lessened death-rate from tuberculosis in the country generally, but some people feel, and I certainly am one of them, that the results attained, compared with what might have been attained, in the light of modern knowledge, and considering the money which is being and has been spent, are a matter for only qualified satisfaction.

For this the delay referred to above is largely responsible, and, so long as this delay continues, no line of treatment, sanatorium or otherwise, is getting a fair chance.

THE REASONS FOR THE USE OF CALCIUM AND IODINE.

(a) IODINE.

In France and America a great deal of work has been done in this connection over a period of years. Ragins¹, of Chicago, has a very valuable paper on the subject in the City of Chicago Municipal Tuberculosis Bulletin, April, 1926. After referring to the well-known findings of many observers (the late Professor Greenfield, of Edinburgh, Plummer, of the Mayo Clinic, and others) that hyperthyroidism—as in exophthalmic goitre, etc.—is rarely, if ever, associated with tuberculosis, he reviews much evidence associating the thyroid functions with resistance to tuberculosis, and shows why iodine therapy is *theoretically* indicated in tuberculosis.

Ritter² has given remarkable results following the use

of a modified U.S.A. tincture—potassium iodide free—being a 10% iodine solution in alcohol and glycerine. This is given in milk, 10-20 drops, three or four times daily, for 2-3 months, followed by a break of a month or so. He claims to have given much larger doses without ill-effects. He says: “I can recall hundreds of tuberculosis patients who have taken the tincture in milk for five or more years and are to-day in the best of health.”

Bourddeau³, in France, has made even wider claims. He uses very large doses continuously for months, and claims that iodine, if pushed sufficiently, is a specific remedy for tuberculosis.

Roy⁴, in India, has recorded good results in six cases of tuberculosis treated by intramuscular injections of Iodeol Viel. One ampoule was injected twice weekly. Cough, sputum, and temperature, all, he says, responded quickly, and he claims that after eight injections the signs in the chest “cleared up.”

Professor Delbet⁵ has demonstrated the value of injections of iodine in oil in surgical tuberculosis. This observer used concurrently chloride of calcium by the mouth. So far as I can trace this is the only instance of calcium and iodine being given concurrently to tuberculous subjects, and there were, as noted above, cases of non-pulmonary tuberculosis.

Without elaborating references and allowing for some of these claims being decidedly optimistic it is fair to say that there has accumulated some evidence that iodine is of value in the treatment of tuberculosis.

Our own results in Cumberland on pre-tubercular children have already been referred to.

It is difficult to follow the rationale of the heroic doses indicated above. Physiologically it would appear as if the type of early case—well-known to every medical man—where the natural resistance seems nearly, but not quite, adequate to holding the disease in check, offers the best field for investigation on the lines, one would imagine, of minimal doses. Iodine, as has been pointed out in previous reports⁶, acts indirectly by stimulating the thyroid gland, which is the keystone of the resistance of the human body to disease, and this result has been definitely proved to be attainable by quite small doses.

(b) CALCIUM.

It has long been suspected by various observers that calcium deficiency may be an important contributory cause both to the onset of pulmonary tuberculosis and to the development of the disease.

Orr (of the Rowett Institute) in a paper⁷ read before the British Association at Southampton in 1925 pointed out that experiments at the Rowett Institute had shown that mortality from certain infections is much higher in animals fed on a diet ill-balanced or deficient in mineral matter. He went on to say: "It has been suggested that deficiency of calcium may be a causative factor in producing a lowered resistance to tuberculosis. If this is correct it is of great economic importance on account of the incidence of tuberculosis in dairy cows. It is known that, at the height of lactation, there is usually a loss of calcium from the body. This is greater the higher the yield of milk, and tuberculosis seems to be more liable to occur in heavy-milking cows."

Prest, Medical Superintendent of the Ayrshire Sanatorium, has shown⁸ some good results in the treatment of both pulmonary and surgical tuberculosis by the subcutaneous use of colloid of calcium.

In the County of Cumberland some equally good results have been obtained in cases of non-pulmonary tuberculosis by the use of calcium in various forms, the best results being obtained by the injection of colloid calcium intramuscularly.

An American observer⁹ examining the blood calcium content in a large series of cases found that "the highest calcium figures were obtained in apparently arrested cases of chronic pulmonary tuberculosis."

The discussion on the therapeutic use of calcium before the British Medical Association at Edinburgh in 1927 added little or nothing to the knowledge of the use of calcium therapy in tuberculosis. One or two interesting points emerged from other aspects.

Fraser (Professor F. R.) said: ¹⁰ "The constancy in the calcium content of the blood serum in health suggests that it plays an important part in the life of the individual and the relation of the body to its environment."

Stewart (University of Edinburgh) emphasised¹¹ the need of distinguishing between calcium absorption and calcium retention. Various observers, for example Professor Loew (Munich University) have pointed out that the estimation of blood calcium is no index that the body is sufficiently supplied with calcium salts. It is practically unanimously agreed by all observers that calcium salts have a function in the body metabolism which is imperfectly understood, and it is believed that calcium has an anti-toxic action as well as an action in the direction of chemiotaxis and stimulation of phagocytosis in certain bacterial affections. It is agreed that the chief problem in the use of calcium medicinally is to ensure absorption and retention. Various lines of treatment have been advocated to ensure this. For example, the simultaneous use of para-thyroid, the use of ultra-violet rays, and so on. These latter methods appear to be unnecessarily elaborate, because there appears to be no doubt that iodine in minute doses definitely assists both the absorption and retention of calcium; so, too, do such foods and ancillary substances (e.g., cod liver oil) as contain Vitamin D. Articles of diet, etc., containing Vitamin A are probably in the same category.

TREATMENT.

The line of treatment in the four cases treated during 1929 has varied slightly.

CASE 1 has had weekly injections (intramuscular) of $\frac{1}{2}$ c.c. colossal calcium, with cod liver oil cream containing 3 minims of tincture of iodine (potassium iodide free) to the dessertspoonful, at the rate of a dessertspoonful three times a day. For reasons unconnected with the question of treatment the cod liver oil cream was discontinued for a short period, during which her weight fell noticeably. (See Chart No. 1.)

CASE 2 has had calcium and iodine as above throughout.

CASE 3 has had calcium lactate, grains 5 daily, with iodine in cod liver oil as above throughout.

CASE 4 has had iodine in cod liver oil throughout, but the calcium injections were discontinued by her

medical practitioner after six months. The discontinuance of the calcium had an interesting result. (See Chart No. 4.)

The cod liver oil cream with iodine has been prepared for me by Thomson, of Elgin.

None of the four cases received sanatorium treatment in the ordinary sense, although all four have spent a large part of the treatment period in open-air shelters supplied by the County Council. Two live in urban areas and two in rural areas. Case 1 was in bed for two months. Cases 2 and 3 have not been in bed, Case 4 has been in bed throughout.

METHOD OF RECORDING RESULTS.

The records kept have been

- (a) Sputum examinations with numerical counts of the organisms. These examinations have been carried out throughout by the Clinical Research Association, and the average number given on each chart is the average count from the examination of 40 microscopic fields.
- (b) Weight Records.—Owing to the isolated nature of the homes these records have for the most part been taken by the patients themselves, who each have instructions to be weighed on the same machine throughout and to make accurate allowances for differences of clothing.
- (c) Temperature Charts.—These records are kept by the patients themselves, after due training.
- (d) X-ray examinations were attempted, but owing to distances and the expense involved had to be abandoned.
- (e) The usual notes on the physical signs in the chest and on the general health of the patients. Each case has been examined by at least two medical men, and three of the cases have been examined by three medical men. The County Medical Officer and three of my colleagues on the County Health Staff have assisted in these examinations, and I am much indebted to the private practitioners who have undertaken the supervision of the treatment in three of the cases and have also examined the cases and reported on their progress.

* SUMMARY OF THE RESULTS.

The results of the treatment on the original advanced case have already been referred to.

With regard to the four cases in the 1929 group, which, one need hardly say, are not in any sense picked cases from the point of view of results, but were the only cases under treatment during the year, the results have been taken up to the end of February, 1930. These cases will continue to be closely watched, and their progress subsequent to February, 1930, will be included in the report for that year, together with the results of certain new cases now under treatment. I have no reason to suppose that the beneficial results indicated hereafter in these four cases will have altered in any way during 1930. In fact, in the one case (No. 4) in which a further sputum examination has been made (May, 1930), because this case had not become negative at the end of February, the sputum count has shown a still further fall in the number of tubercle bacilli present, the count being one organism per 7 fields, as compared with one in 3 fields at the end of February. With these preliminary remarks one may say that the results in all four cases in the 1929 group have been *exceedingly satisfactory*—much better than could possibly have been expected. It has been pointed out that two of these were genuine early cases; one was rather past the early stage, and one was definitely an advanced case with cavitation. All four cases have shown a striking improvement in general health, a marked diminution of cough and sputum and a marked increase in weight. Two of the cases were febrile at the commencement of treatment, and became a-febrile early in the treatment.

Case No. 2 resumed work as an Insurance Agent during the year. Cases 1 and 3 were able to resume work, but neither case had any occupation to follow.

The most outstanding point of interest, however, has been the remarkable diminution in the number of tubercle bacilli present per microscopic field in all four cases.

When treatment began, one of the cases had 23 tubercle bacilli present in the sputum per microscopic field, two had 11 per field, and one had three per field. As shown in the Table which follows, three of the four

* See Page 53.

became *negative* during the year, and one fell to one organism per three microscopic fields.

This case has, as has been pointed out above, subsequently fallen to one organism per seven fields. That is a very striking state of affairs. One knows that the number of organisms present in the sputum of a tuberculous patient varies from time to time, but that the sputum of *all the four cases* under this treatment during 1929 should show a *steady fall* in the number of organisms present, and should in the case of three of them fall to negative within a few months, *must be more than a coincidence*. It suggests that this line of treatment, apart from any effect that it may have in arresting the disease in early cases, may also have a definite value in reducing the infectivity of tuberculous patients to those in contact with them.

I have met experts in tuberculosis who have told me that the number of tubercle bacilli in the sputum is not a matter of prime importance. In a general way that may be so—I do not know—but *when a sputum becomes negative that cannot possibly be so*.

The sputum count in Case No. 3 is particularly interesting. This was an advanced case placed on treatment at the request of one of my colleagues and against my own judgment, and in this case the calcium was given by the mouth only, yet the sputum count fell from 23 per field to negative in five months.

Average Number of Tubercle Bacilli per Microscopic Field.									
Case No.	Before treatment began.	After being under treatment for:—							
		Two months	Four months	Five months	Six months	Eight months	Nine months	Ten months	Subsequent Reports.
1	11	...	1	...	1 in 40 fields	...	Negative	...	Two Negative
2	3	3	4	...	1	...	Negative	...	One 1 in 10 fields
3	23	5	..	Negative	...	...	...	...	Not due
4	11	7	...	3	...	5	..	1 in 3 fields	Not due

GRAPHS SHOWING THE FALL IN THE NUMBER
OF TUBERCLE BACILLI IN THE SPUTUM AND
THE GAIN IN WEIGHT IN EACH OF THE FOUR
CASES.

NOTE.

In the accompanying Graphs the sputum count is shown in green and the weight in red.

CHART No. 1 (CASE 1)

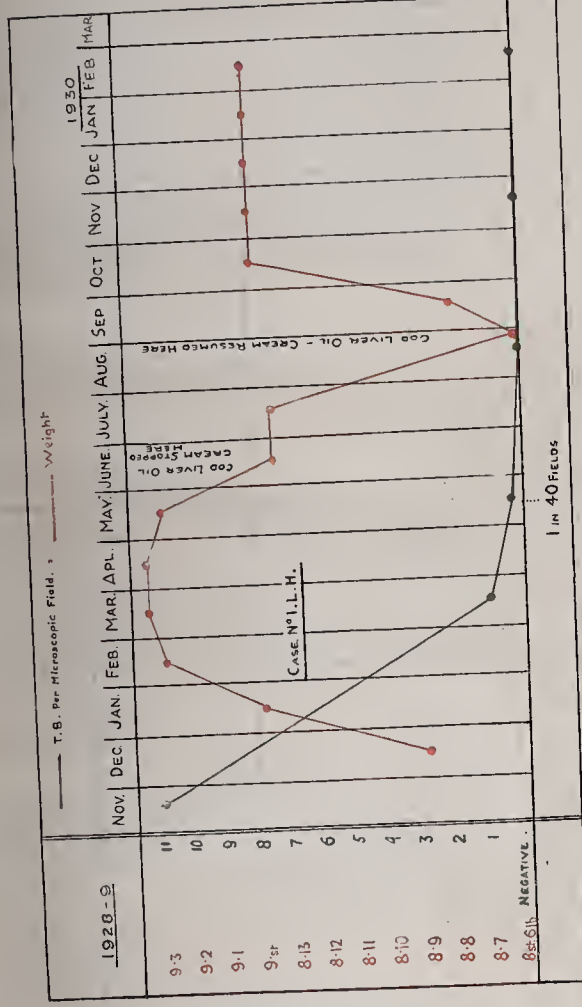
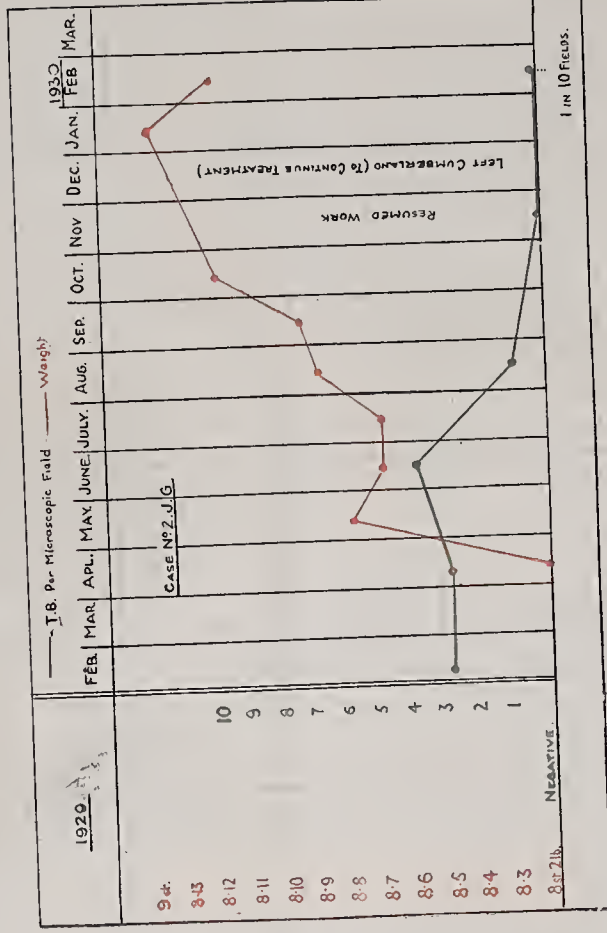


CHART No. 2 (CASE 2)





* TEMPERATURE CHARTS.

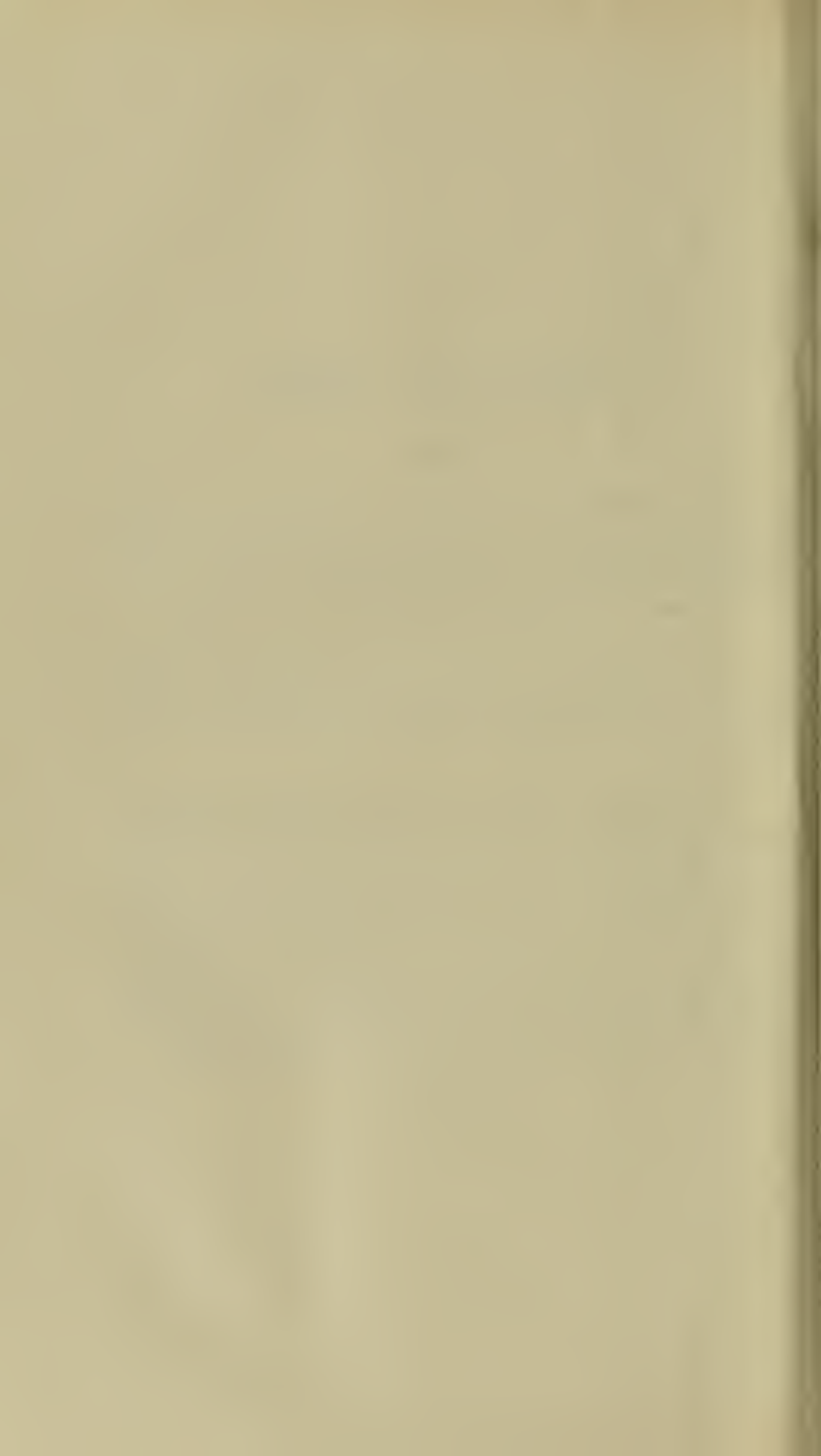
NOTE.

The following temperature charts are merely *extracts* from the records of the cases showing the temperature swing before treatment began and how in each of the cases the temperature quickly fell to normal.

The charts of the original advanced case have been included, although the actual ones illustrated do not represent the exceptional swing present in this case before treatment.

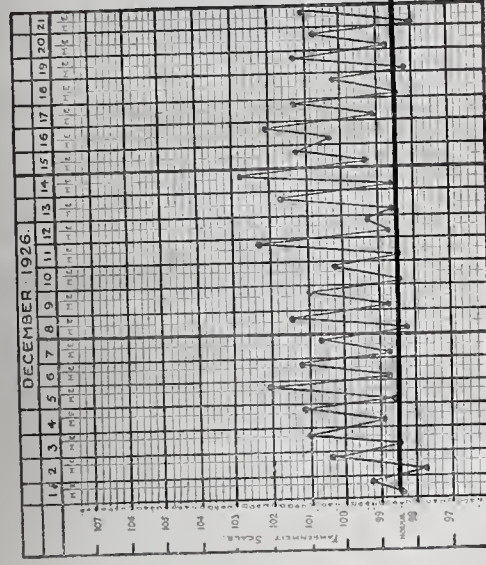
In Case No. 1 the sharp rise in early February is accounted for by the fact that this patient immediately on being allowed to return home after having been in bed for two months went for a long walk amounting to five or six miles. From the date at which these charts terminate all three cases have remained free from any rise of temperature except on isolated occasions, when the temperature has risen to the region of 99° or thereabouts.

* See Page 53.

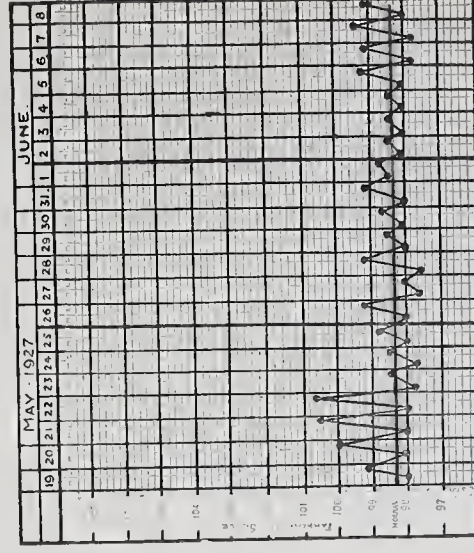
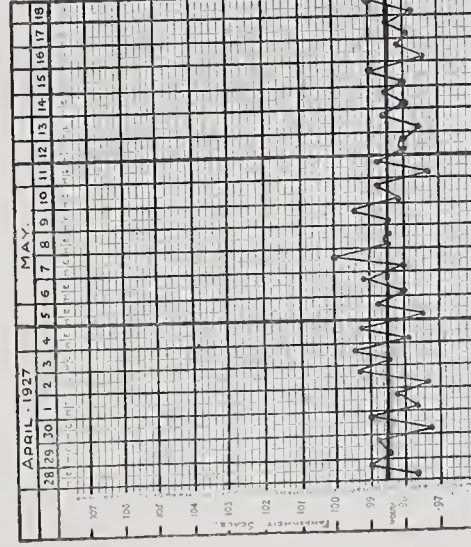
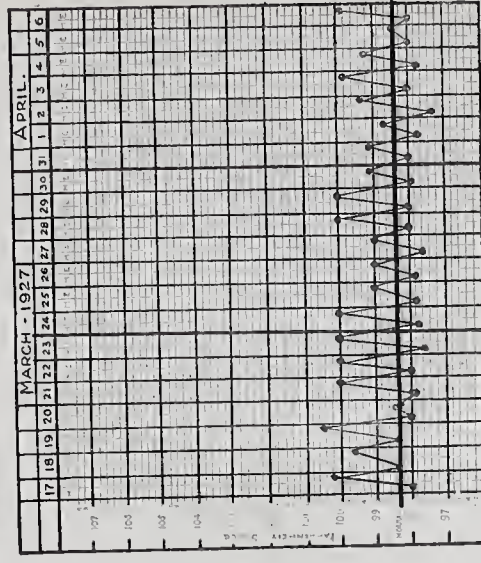
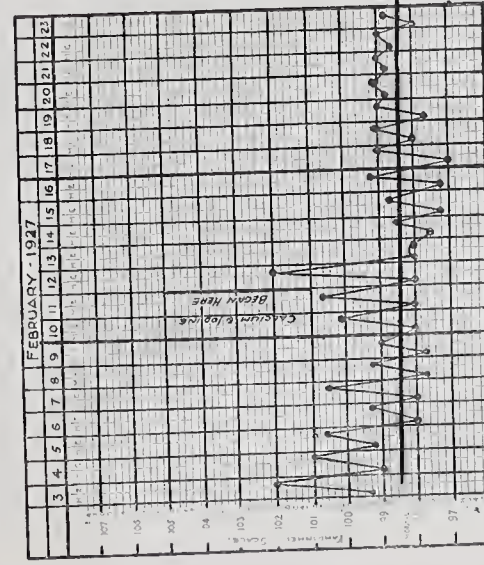


THE ORIGINAL ADVANCED CASE.

(a) BEFORE TREATMENT.

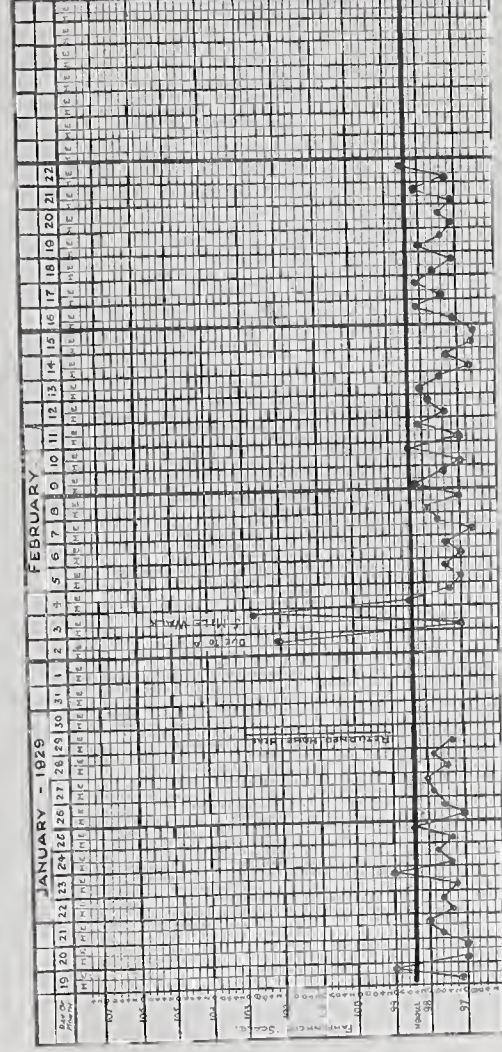
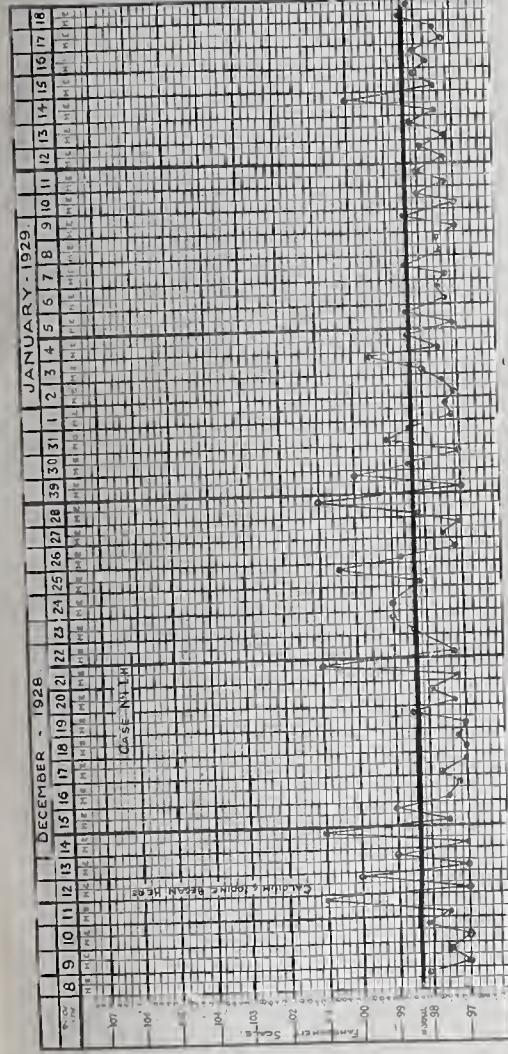


(b) AFTER TREATMENT.



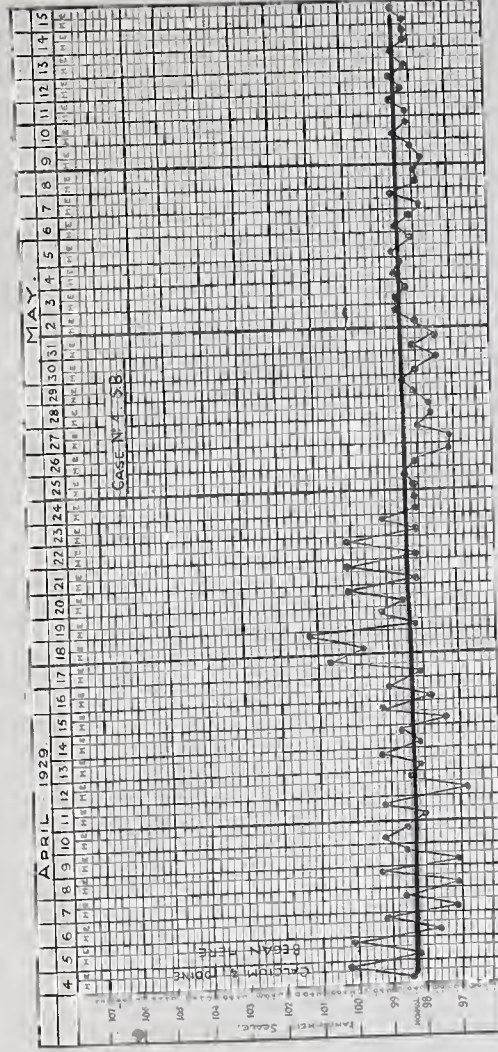
Since June, 1927, this patient has remained practically a-febrile throughout, with occasional rises to 99°.

CASE No. 1.

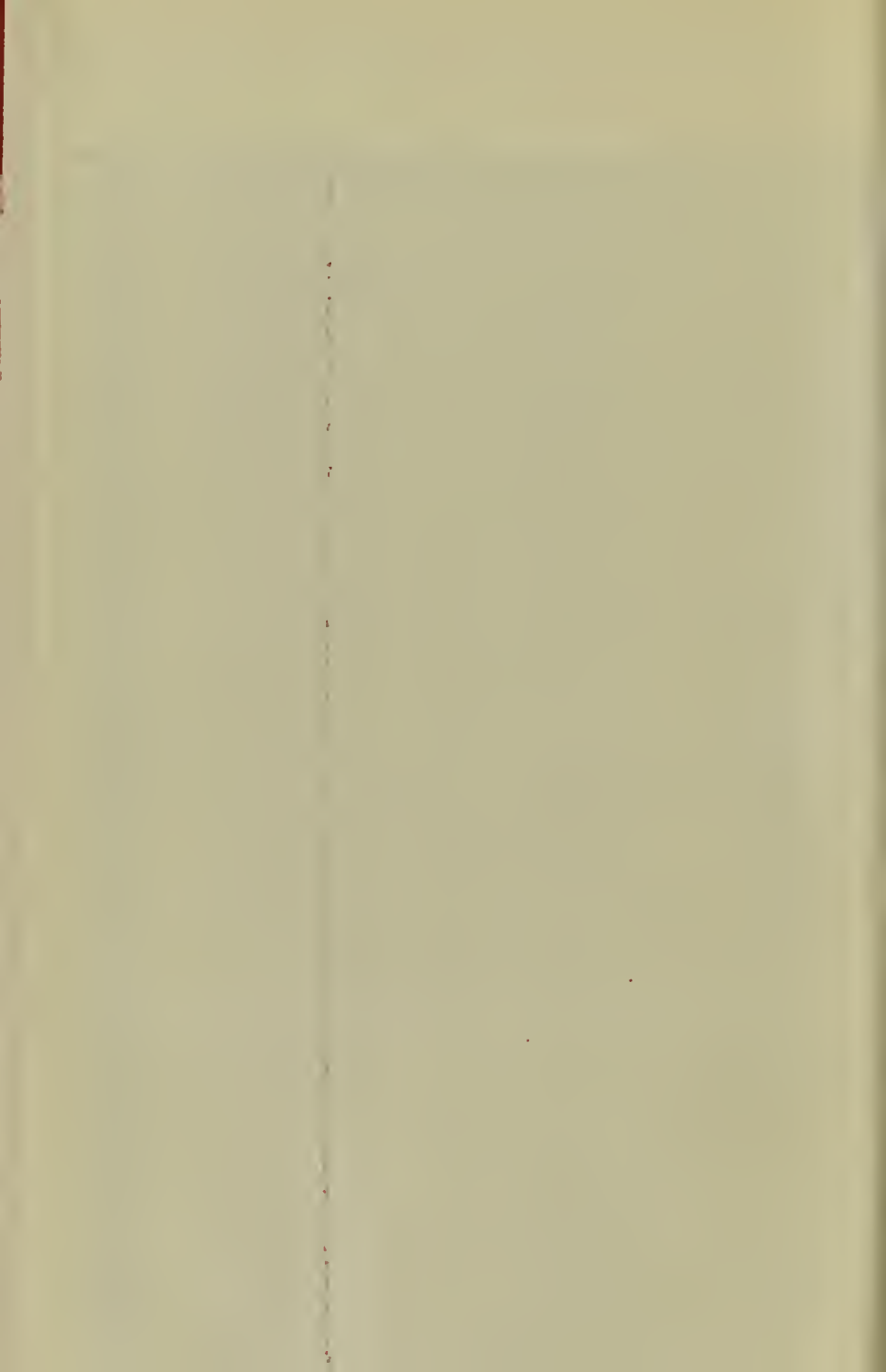


Since February 22nd, 1929, this patient has remained a-febrile.

CASE No. 4.



This patient has remained continuously a-febrile since except for a few isolated rises, mostly to 99° or so.



EXTENSION OF THE INVESTIGATION DURING 1930.

In view of the fact that my work in this County is almost entirely confined to assisting in the administration of the Health Department and that my opportunities for clinical work are becoming steadily less, I am extremely glad to be able to say that a number of medical men who are all experts on tuberculosis have been good enough to agree to carry the investigation further during 1930 in their own areas. These are Dr. Burrell at the Brompton Hospital, London; Dr. Goodchild at Blencathra Sanatorium; Dr. Peile at the Sanatorium, Bridge-of-Weir; Dr. Varrier-Jones at Papworth; Dr. W. H. Dickinson at Newcastle. It may also be possible to arrange for the treatment to be investigated at one of the Sanatoria belonging to the Lancashire County Council through Dr. Lissant-Cox.

Investigations by various observers have shown that the presence of albumen in the sputum may be of equal or even more importance in early pulmonary tuberculosis than the presence of tubercle bacilli, both for diagnosis and for estimating the probable progress of the case.

Moxey¹² in a recent article has set out the position very clearly. Broadly speaking the position is this, albumen in the sputum indicates destruction of lung tissue, and is present in any condition which causes this destruction. It is present, for example, in certain acute lung diseases such as pneumonia, but in the more chronic conditions in which it is present the diagnosis between these and tuberculosis should not prove difficult.

I have therefore arranged with Dr. Faulds that the sputum of new cases placed under treatment subsequent to the transfer of the Bacteriological work of the County Council to the Pathological Department of the Cumberland Infirmary will be examined for albumen as well as for the determination of the numbers of tubercle bacilli present.

I have had considerable correspondence with the Glaxo Laboratories and have seen some of their Directors and chemical experts, and these Laboratories have agreed to prepare a cod liver oil emulsion containing Iodine as usual and with a guaranteed Vitamin D content at a very

moderate cost, which may allow for an extension of the treatment to a greater number of cases. These Laboratories also prepare a colloid calcium with Vitamin D for intramuscular injection. Some of the new cases in 1930 are being treated on these Glaxo products for comparison with the original products used in 1929.

NOTES ON THE INDIVIDUAL CASES.

CASE No. 1.—L. H.

This is the case of a girl, aged 18, the daughter of a farmer, in comfortable circumstances. She was for about two months treated (as a paying patient) in a poor law hospital in Carlisle. The accommodation available was not very suitable for a case of pulmonary tuberculosis of this kind. In spite of this she made extraordinarily rapid progress. Being discontented with her surroundings she went home at the end of January. She has done extremely well throughout, and is at the time of writing to all appearances perfectly well. She became a-febrile early in February, 1929, and has remained a-febrile since. It will be noted that the weight chart shows a striking fall between April and August. I attribute this to the girl's careless habits. She is an entirely irresponsible type, and insisted on going out to dances and generally living unwisely. As the family were not themselves paying for the cod liver oil cream, and as I was dissatisfied with the part the girl was playing in the treatment of her own disease, I stopped the cod liver oil cream in June, substituting iodine in milk. The rapid fall in weight thereafter will be noted, as also the rapid gain following the resumption of cod liver oil cream in August. It should perhaps be added that this girl was a contact of an older sister who two years ago developed acute miliary tuberculosis, and died three months after the onset of the disease.

CASE No. 2.—J. G.

This is the case of a man, aged 45, an insurance agent in comfortable circumstances. As the charts show, he made uninterrupted progress, and resumed duty in November, 1929. This patient remained a-febrile throughout.

CASE No. 3.—J. R. B.

This is a case of a man, 30 years of age, suffering from both pulmonary and surgical tuberculosis. The

latter is of long standing and is complicated by a severe spinal curvature and shortening of one leg. He had been under observation as a chronic case of pulmonary tuberculosis for 9 years, had received prolonged sanatorium and colony treatment. His home conditions are not very satisfactory. Towards the end of 1928 the healed lesions in the lungs showed evidence of breaking down, and during 1929 his condition very rapidly got worse. He was put on calcium and iodine treatment in September, 1929, at the wish of the Tuberculosis Officer of the area. He appeared to me to be too advanced to be likely to benefit, and as the arrangements for the weekly injections of calcium in this case would have been particularly difficult I gave him calcium lactate tablets (5 grs. daily) by the mouth. He had, of course, the usual iodine in cod liver oil cream. The results in this case have been very striking. His general health has improved immensely, his cough and sputum have almost ceased. The fall in the number of organisms present per microscopic field to negative is, considering the method of administration of calcium and the extremely short period required to attain this result, very remarkable.

CASE No. 4.—S. B.

This case is one of a girl of 22 years of age in rather poor circumstances, who has been throughout in a shelter in a damp low-lying urban area. She has been throughout under the care of her panel practitioner, who modified the usual treatment by discontinuing the calcium injections at the sixth month. The result, as shown on her chart, was that her weight, which had been rising continuously, ceased to rise and her sputum count, which had been falling steadily, again increased.

This is the only point during the investigation in the series of four cases which was in anything of the nature of a control, and appears to indicate the value of the combination of calcium and iodine.

This patient, unlike the others, has remained in bed throughout.

NOTE.—Just at the time of going to press I have received information from this patient's doctor to say that she has developed a broncho-pneumonia followed by a localised empyema.

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